

## memorandum

DATE: May 8, 1992

REPLY TO: Wildlife Management Biologist, FWS, Jackson, Mississippi

SUBJECT: Deer Disease Health Checks

TO: District Refuge Managers (upland)

WI-7,1

MANAGER	
ASST.	
ASST.	
CLERK	
MAINT.	
MAINT.	
COOP.	
FILE	

send back  
to Ray!

Please review your records and indicate to me if you have had a deer herd health check in the last 3-4 years. I need to set up this summer's schedule as quickly as possible, so please advise me by May 18, 1992. We will probably conduct 3-4 station checks which concentrate on refuges with significant deer resources and/or new refuges.

Ray, St. Catherine Creek had a check  
in September 1991.

"Safety - Take It Personally"

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ST. CATHERINE CREEK  
NATIONAL WILDLIFE REFUGE

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SOUTHEASTERN COOPERATIVE WILDLIFE DISEASE STUDY



PARASITOLOGY  
COLLEGE OF VETERINARY MEDICINE  
THE UNIVERSITY OF GEORGIA  
ATHENS, GEORGIA 30602

UNITED STATES  
FISH AND WILDLIFE  
SERVICE  
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MANAGER	
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November 15, 1991

Mr. Tom Prusa, Manager  
St. Catherine's Creek National Wildlife Refuge  
Post Office Box 18639  
Natchez, Mississippi 39122

Dear Tom:

Enclosed is our report on the deer herd health check conducted on St. Catherine's Creek National Wildlife Refuge, Adams County, Mississippi, on September 16, 1991. The health check involved examination of five adult deer. The data are arranged into a series of tables (parasitologic, serologic, and pathologic) and are accompanied by interpretive comments.

As is evident from our comments, herd health did not appear to be compromised at the time of the study, and we did not encounter any overtly diseased animals. However, the APC value indicates that the herd has a good probability of exceeding nutritional carrying capacity. In addition, the moderate levels of pathogenic large lungworms indicates a potential for future lungworm pneumonia problems. Although herd health does not appear to be in immediate jeopardy, continuation of current herd density can be expected to lead to declines in herd health with increased parasite infections. Our experience has been that APC values become elevated before declines in other condition parameters (body weights, antler development, reproductive rates, etc) are evident. Based on our data, herd growth should be controlled and consideration should be given to reducing herd density to help alleviate potential health problems in the future.

We trust that this information will be of value in management of this deer herd. Detailed information on the parasites and diseases covered in these reports can be obtained from the text Diseases and Parasites of White-tailed Deer. In particular, we would refer you to pages 413-423 for an explanation of the relationships between deer density, nutrition, and disease. The attached flier also has an elementary explanation of the basics of deer

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Mr. Tom Prusa  
November 15, 1991

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herd health. If you have any questions about these reports or if we can be of assistance on other matters, please do not hesitate to contact us.

Best regards,

Sincerely,

  
William R. Davidson, Ph.D.  
Associate Professor

WRD:gc

Enclosures

CC: Mr. Jack Herring  
Mr. Ed Hackett  
Mr. Ray Aycock  
Mr. James W. Pulliam, Jr.  
Mr. Harold W. Benson  
Dr. E. Frank Bowers  
Mr. James Jones  
Mr. Cleophas R. Cooke, Jr.  
Mr. Jerry J. Presley  
Mr. Bud Bristow  
Mr. Joe L. Herring

Table 1. Arthropod, helminth, and protozoan parasites of five white-tailed deer (*Odocoileus virginianus*) collected from St. Catherine's Creek National Wildlife Refuge, Adams County, Mississippi, on September 16, 1991.

						ARTHROPODS					
Animal Number	1	2	3	4	5	Animal Number	1	2	3	4	5
Age (years)	6.5	1.5	1.5	1.5	2.5	Lice	-	-	-	-	-
Sex	F	F	F	M	F	House Flies	Light	Light	Light	Light	Light
Weight (pounds)	144	70	75	120	110	Ticks	-	Light	Light	-	-
Physical Condition	Good	Fair	Fair	Fair	Fair	Chiggers	Light	Light	Light	Light	-
Kidney Fat Index	21.8	25.9	29.8	20.4	17.7	Ear Mites	-	-	-	-	-
Packed Cell Volume	36	47	39	42	50	Nasal Bots	-	-	Light	Light	Heavy
Hemoglobin	13.5	17.25	14.75	16.25	17.0						

		<u>Number of Parasites Per Deer</u>							
<u>Location in Host</u>	<u>HELMINTHS</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>Range</u>	<u>Prevalence</u>	<u>Average</u>
Brain									
Circulatory									
Lungs	Dictyocaulus viviparus	5	-	-	14	15	0-15	60%	6.8
	Potostrongylid larvae	-	-	+	+	-	-	40%	-
	Setaria yehi	-	-	2	3	-	0-3	40%	1.0
Abdominal Cavity	Fascioloides magna	-	-	-	4	-	0-4	20%	0.8
Liver									
Esophagus									
Rumen	Paramphistomum liorchis	-	10	-	-	-	0-10	20%	2.0
Abomasum	Mazamastrongylus pурсglovei	1,554	352	720	2,300	1,150	352-2,300	100%	1,215.2
APC = (2,120)	Ostertagia mossi	777	117	320	575	627	117-777	100%	483.2
	Ostertagia dikmansii	-	-	-	-	418	0-418	20%	83.6
	Trichostrongylus axei	389	411	640	145	105	105-640	100%	338.0
	<u>PROTOZOANS</u>								
Blood	Trypanosoma cervi	-	+	-	+	+	-	60%	-
	Theileria cervi	-	+	+	+	+	-	80%	-

Table 2. Results of serologic tests for selected diseases in five white-tailed deer from St. Catherine's Creek, Adams County, Mississippi, on September 16, 1991.

Disease	Deer Number				
	1	2	3	4	5
Leptospirosis					
(serotype <u>pomona</u> )	Neg	Neg	Neg	Neg	Neg
(serotype <u>hardjo</u> )	Neg	Neg	Neg	Neg	Neg
(serotype <u>grippotyphosa</u> )	Neg	Neg	Neg	Neg	Neg
(serotype <u>icterohemorrhagiae</u> )	Neg	Neg	Neg	Neg	Neg
(serotype <u>canicola</u> )	Neg	Neg	Neg	Neg	Neg
(serotype <u>bratislava</u> )	Neg	Neg	Neg	Neg	Neg
Brucellosis	Neg	Neg	Neg	Neg	Neg
Anaplasmosis	Neg	Neg	Neg	Neg	Neg
Infectious bovine rhinotracheitis (IBR)	Neg	Neg	Neg	Neg	Neg
Bovine virus diarrhea (BVD)	Neg	Neg	Neg	Neg	Neg
Parainfluenza <sub>3</sub> (PI <sub>3</sub> )	Neg	Neg	Neg	Neg	Neg
Epizootic hemorrhagic disease (EHD)	Pos	Neg	Neg	Sus	Neg
Bluetongue (BT)	Pos	Neg	Neg	Sus	Neg
Vesicular stomatitis virus (VSV-NJ)	Neg	Neg	Neg	Neg	Neg
Vesicular stomatitis virus (VSV-Ind)	Neg	Neg	Neg	Neg	Neg

Table 3. Lesions and pathologic conditions in five white-tailed deer collected from St. Catherine's Creek, Adams County, Mississippi, on September 16, 1991.

Lesion/Condition	Deer Number				
	1	2	3	4	5
Peribronchitis/bronchitis	-	1	1	1	1
Pleuritis	-	1	1	-	-
Pneumonitis	-	-	1	1	-
Focal pneumonia	-	-	1	-	-
Verminous hepatitis (liver flukes)	-	-	-	1	-
Verminous peritonitis (liver flukes)	-	-	-	2	-
Verminous ruminitis (rumen flukes)	-	1	-	-	-
Infectious cutaneous fibromas	-	1	1	1	-
Subcutaneous buckshot pellet	1	-	-	-	-
Lymphadenitis	-	-	-	1	-

\*Key: - = lesion or condition not present; 1 = minor tissue damage or mild pathologic change; 2 = moderate tissue damage or moderate pathologic change; 3 = extensive tissue damage or marked pathologic change.

INTERPRETIVE COMMENTS: Large lungworms (Dictyocaulus viviparus) present in low to moderate numbers in three deer. Protostrongylid larvae, probably from muscleworms (Parelaphostrongylus andersoni), present in two deer. Large lungworms and protostrongylid larvae associated with mild lung damage (peribronchitis, bronchitis, pleuritis, pneumonitis, pneumonia) in four animals. Liver flukes (Fascioloides magna) present at low levels in one deer and associated with mild liver damage (verminous hepatitis) and inflammation of the abdominal cavity (peritonitis) in this deer. Abomasal parasites (Mazamastrongylus pursglovei, Ostertagia dikmansii, O. mossi, and Trichostrongylus axei) at a high level (APC = 2,120) indicating a good probability that the herd exceeds nutritional carrying capacity. Abdominal worms (Setaria yehi) and rumen flukes (Paramphistomum loricatum) present but not considered pathogenic at the low to moderate levels encountered, although rumen flukes were associated with mild inflammation of the rumen lining (ruminitis). Blood protozoans (Trypanosoma cervi and Theileria cervi) present in most deer with the latter considered a stressor in malnourished, heavily parasitized hosts. Arthropod parasites at levels commonly found on white-tailed deer in the southeastern United States.

Physical condition ratings, kidney fat indices, body weights, and hematologic values not remarkable and within normal ranges. In addition to lesions attributable to parasitism (noted above), pathologic studies disclosed three deer with viral-induced skin tumors (fibromas), mild non-specific inflammation of the lymph nodes in one deer, and an single buckshot pellet embedded in the skin of one deer. Serologic tests for antibodies to selected infectious diseases disclosed two deer with antibodies to EHD and bluetongue viruses. These viruses are the cause of hemorrhagic disease, the most significant infectious disease of white-tailed deer, and antibodies to these agents indicate prior activity by these viruses in the herd but not necessarily clinical disease. The remaining serologic tests were uniformly negative suggesting minimal activity by the other etiologic agents.

An overview is as follows: 1) based on APC data the herd exceeds the nutritional carrying capacity; 2) the levels of important pathogenic parasites (lungworms, liver flukes, ticks, blood protozoans) were not at levels considered sufficient to produce mortality; 3) pathologic evidence of parasitism/malnutrition syndrome was not apparent although condition values were below biologic potentials; 4) there has been activity by hemorrhagic disease viruses which are the most important infectious disease agents of white-tailed deer; and 5) these data suggest that declines in herd health status can be expected to occur if current herd density is maintained or increased. Based on these findings, consideration should be given to controlling herd density to help alleviate the density dependent disease factors (parasitism and nutritional stress) and prevent future declines in herd health.